



## **Web-Mobile Based Application to Detect the Elephants' Intrusion in Sri Lanka: A Geofencing Based Approach**

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### **Abstract**

Protecting the endangered Sri Lankan elephants and mitigating the Human-Elephant Conflict (HEC) require proper understanding of the subject. Yet, so far, the available information is fragmented or not easily accessible and often it is outdated or erroneous. While efforts are ongoing to rectify this, it is imperative that, in order to make the most effective use of information, there should be a state-of-the-art system to centralize available information for easy access and updation, via various methods, Therefore this study attempted to evaluate the potential for using web-mobile applications and geofencing technique to detect the elephants' intrusion in Udawalawe National Park in Sri Lanka. To fulfill the aforesaid requirement, as an innovative idea, a sophisticated tracking system which comprises a web-mobile based application server and a mobile application leveraging embedded GPS data in images is developed as a prototype and tested in Udawalawe National Park having selected a sample elephant to fix the GPS collar. The mobile application helps to obtain the relevant elephant data by accessing the geospatial database which would be implemented in the cloud-based environment in a geofence. This system thus addresses the main problems of identification, tracking and database maintenance of identification and tracking elephants and maintains the record of them. Further, this will address the monitoring and implementation of a geospatial database of elephants. Using these feasibility study results, an infrared (IR) camera and face recognition system will be developed to absorb the data and present the results of the individual elephant for free access in a website to be developed. This information could be used to mitigate the human elephant conflict in Sri Lanka, and help monitor elephant behavior to greatly benefit the relevant parties like farmers and wildlife conservationists.

**Keywords:** Geofencing, Human Elephant Conflict, Tracking, Web and Mobile application